

life sciences notes

VIRUSES

New antiviral agent found

The action of many viruses has been found to be closely associated with the walls of the injected cells. Now a substance has been found that by acting on the cell wall blocks replication of such viruses.

The substance, an enzyme called phospholipase C, is extracted from a bacterium which causes gas gangrene. In the April PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, Drs. Robert M. Friedman and Ira Pastan of the National Institutes of Health, Bethesda, Md., say the enzyme reduces virus yields from infected chick embryo cell cultures by about 90 percent. In the presence of the antibiotic actinomycin D it reduces yields by 95 percent.

The researchers say the cells appear undamaged by the enzyme treatment, even though their phospholipid content is reduced by more than 40 percent. No changes in structure are observed, and 16 hours after treatment cells are able to support virus growth almost as well as untreated cells.

Dr. Friedman says the enzyme provides a new approach to antiviral chemotherapy.

PEST CONTROL

Artificial light may doom insects

Most insects survive periods of environmental inhospitality by going into a resting phase called diapause. Scientists with the U.S. Department of Agriculture now are working on ways to trick destructive insects into and out of diapause at the wrong times.

Dr. Dora K. Hayes, a biochemist at USDA's Agricultural Research Service in Beltsville, Md., reports in the June BULLETIN OF THE ENTOMOLOGICAL SOCIETY OF AMERICA that insects have been forced into and out of diapause by exposure at night to measured amounts of blue light. In many insects winter diapause is controlled by the length of the day.

If similar results are obtained in the field, crop pests might be forced out of diapause during a time of fatally cold weather or short food supply, or during a time they lack suitable host plants for reproduction.

Scientists say nontoxic or naturally occurring substances might be found which control diapause in species in which the rest period is not so dependent on light. Then perhaps pests could be forced into diapause during a time they would normally be doing their damage. Regulated temperatures and humidity may also help.

DRUGS

Swiss to control pharmaceutical advertising

The Swiss Federal Council in Berne has taken its first steps to regulate pharmaceutical advertising. The first targets of action will be synthetic substances that can produce human dependency.

The council is empowering the Federal Public Health Department and IKS, the inter-cantonal drug agency, to compel drug companies to warn doctors of any habit-forming properties of their products. IKS was created by the 22 sovereign cantons to control drugs. Partly under

U.S. Food and Drug Administration pressure, IKS is becoming more like the American institution.

Swiss Government officials say they know of many instances when companies have not made clear to physicians that their products may be habit forming. As a result, they say, physicians have unwittingly made some of their patients drug dependent.

Other legal action is being taken against the growing of drug-producing plants such as marijuana.

MODELING

Bacterial life simulated in computer

A Michigan researcher has created a computer model of a bacterium, the ubiquitous *Escherichia coli*. Fed on machine language input, the model so far has been able to grow, function and reproduce itself just like its protoplasmic counterpart.

Dr. Roger Weinberg of the University of Michigan at Ann Arbor says he integrated some 500 pieces of data on *E. coli* into the much-simplified model to see if it would imitate the functioning of a real cell. It did. However, Dr. Weinberg says, it is much harder to keep the mathematical cell healthy than the real one. "The computer model has a very tenuous grasp on life," he says. It is believed that this is the first successful computer simulation of a complete living cell.

Currently Dr. Weinberg is using the model to test and refine theories about cellular control of biochemical reaction rates.

SMOKING

Cigarettes calm the frame

Cigarette smoking relaxes the skeletal muscles, those that get sorest after hard work. This is the conclusion of research by Drs. Edward F. Domino and Alona M. von Baumgarten of the University of Michigan, Ann Arbor. The work was sponsored jointly by the Public Health Service and the industry-sponsored Council for Tobacco Research.

Dr. Domino uses the large muscle of the thigh as representatives of skeletal muscles because the knee-jerk reflex associated with it is easy to monitor. Forty-five male college students between the ages of 19 and 29 were studied. It was found that smoking a high-nicotine cigarette depresses the knee-jerk reflex by as much as 67 percent. Low nicotine cigarettes produced about 45 percent depression, while nicotine-free cigarettes made of dried lettuce produce no effect.

PHYSIOLOGY

The hottest runner is the winner

It is possible to tell accurately the outcome of a marathon race using only a thermometer. Dr. O. G. Edholm, head of the division of human physiology at the National Institute for Medical Research in London, reports that athletes' body temperatures just after a race tell how they finished. The first has the highest temperature, the last the lowest, with the others strung between in proper order. One winner has been recorded with a temperature of 106 degrees, near the point at which a human being is in serious trouble.